UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,067	04/06/2001	Don E. Curry	005040/TCG/PMD/LE	7268

32588 7590 05/14/2007

APPLIED MATERIALS, INC.
P. O. BOX 450A
SANTA CLARA, CA 95052

EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1763	

MAIL DATE	DELIVERY MODE
05/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/828,067	CURRY ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-35 and 38-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-35 and 38-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 29, 30, 31, 33, 34, 42-52, and 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (JP05-198512) in view of Sivaramakrishnam; Visweswaren et al. (US 5,531,183 A). Itsudo teaches:

i. A wafer (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6), a wafer (2; Figure 6) supply opening (not shown; inherent) being formed in one of the walls for transferring a wafer (2; Figure 6) into the processing chamber (1; Figure 6; abstract); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2; Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing a gas from the processing chamber (1; Figure 6; abstract), connected such that the gas has a tendency to flow toward the exhaust line (4; Figure 6); and a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure 6) component for providing a processing gas into the manifold cavity (9; Figure 6) wherein the processing gas

comprises reactive gases used for processing the wafer – Applicant's claim requirement of gas identity, is an intended use claim requirement of the ending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

ii. wherein the upper wall (8; Figure 6) of the processing chamber (1; Figure 6; abstract) comprises a plurality of processing gas supply openings (10; Figure 6, 8), each of the processing gas supply openings (10; Figure 6, 8) provide an intake opening (top surface of 8 at entrance of 10; Figure 6; abstract) into an upper surface of the upper wall (8; Figure 6) and an exhaust opening (bottom surface of 8 at exit of 10; Figure 6; abstract) out of a lower surface of the upper wall (8; Figure 6) to provide a pathway for flowing processing gas from the manifold cavity (9; Figure 6) into the intake openings (top surface of 8 at entrance of 10; Figure 6; abstract) and out of the exhaust openings (bottom surface of 8 at exit of 10; Figure 6; abstract) of the processing gas openings (10; Figure 6, 8) in the upper wall (8; Figure 6), and into the processing chamber (1; Figure 6; abstract), the processing gas supply openings (10; Figure 6, 8) being nonuniformly (Figure 8) distributed over the upper wall (8; Figure 6) to create a flow pattern comprising a

predominantly vertical flow of processing gas onto the wafer, as claimed by claim 29 – When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

iii. The apparatus (Figure 6, 8; abstract) of claim 29 wherein the openings (10; Figure 6, 8) are more densely located on one side of the upper wall (8; Figure 6) than on another side thereof, as claimed by claim 30

iv. The apparatus (Figure 6, 8; abstract) of claim 30 wherein the openings (10; Figure 6, 8) are substantially equal in size, as claimed by claim 31

v. The apparatus (Figure 6, 8; abstract) of claim 29 wherein the exhaust line (4; Figure 6) is connected at an exhaust location which is off-center with respect to a center point (geometric center of 8; Figure 8) of the wafer (2; Figure 6), when viewed from above, so that the gas exits out of the processing chamber (1; Figure 6; abstract) at the exhaust location which is off-center with respect to a center point (geometric center of 8; Figure 8) of the wafer (2; Figure 6), as claimed by claim 33

vi. The apparatus (Figure 6, 8; abstract) of claim 33 wherein a channel (present, not labelled; Figure 1) is defined within the processing chamber (1; Figure 6; abstract), wherein the channel (present, not labelled; Figure 1) is concentric with the wafer (2; Figure 6), wherein the processing gas flows radially outwardly over the wafer (2; Figure 6) into the channel (present, not labelled; Figure 1), from the channel (present, not labelled; Figure 1), to the exhaust location into the exhaust line (4; Figure 6), as claimed by claim 34 – When the structure recited in the reference is substantially identical to that of the claims,

claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

vii. A wafer (2; Figure 6) (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2; Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); an exhaust system comprising an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing an exhaust gas from the processing chamber (1; Figure 6; abstract); a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure 6) component; a plurality of processing gas supply openings (10; Figure 6, 8) distributed non-uniformly in the upper wall (8; Figure 6) providing a means for supplying a processing gas from the manifold cavity (9; Figure 6) to the processing chamber (1; Figure 6; abstract), wherein the processing gas comprises non-depleted reactive gases used for processing the wafer (2; Figure 6), wherein the exhaust gas comprises reacted gases and depleted processing gas, wherein the processing gas supply openings (10; Figure 6, 8) may be non-uniformly distributed over the upper wall (8; Figure 6), wherein the processing gas supply openings (10; Figure 6, 8), the manifold cavity (9; Figure 6) and component, processing gas supply, and exhaust system predominantly determine the

flow pattern of processing gas onto the upper surface of the wafer (2; Figure 6), as claimed by claim 42

viii. The apparatus of claim 42, wherein the exhaust line (4; Figure 6) is connected at an exhaust location which is off-center with respect to a center point of the wafer (2; Figure 6), when viewed from above, so that the processing gas exits out of the processing chamber (1; Figure 6; abstract) at the exhaust location which is off-center with respect to a center point of the wafer (2; Figure 6), as claimed by claim 43

ix. The apparatus of claim 42, wherein the processing gas openings comprises openings on the manifold cavity (9; Figure 6) side of the upper wall (8; Figure 6) that differ in location and/or direction than the corresponding openings on the processing chamber (1; Figure 6; abstract) side of the upper wall (8; Figure 6), as claimed by claim 44

x. The apparatus of claim 42, wherein the processing gas supply openings (10; Figure 6, 8) create a predominately vertical flow pattern of processing gas onto the upper surface of the wafer (2; Figure 6), as claimed by claim 45

xi. The apparatus of claim 42, wherein the processing gas provided into the processing chamber (1; Figure 6; abstract) enters predominantly through the processing gas supply openings (10; Figure 6, 8) , as claimed by claim 46

xii. A wafer (2; Figure 6) (2; Figure 6) processing apparatus (Figure 6, 8; abstract), comprising: a processing chamber (1; Figure 6; abstract) defined by a lower wall, an upper wall (8; Figure 6) and side walls extending from the lower wall to the upper wall (8; Figure 6); a susceptor (6; Figure 1) in the processing chamber (1; Figure 6; abstract) on which the wafer (2; Figure 6) can be located so that an upper surface of the wafer (2;

Figure 6) faces the upper wall (8; Figure 6); a manifold (9; Figure 6) component located on the processing chamber (1; Figure 6; abstract) and, together with the upper surface of the upper wall (8; Figure 6), defining a manifold cavity (9; Figure 6); a processing gas supply line (12; Figure 6) connected to the manifold (9; Figure 6) component; a plurality of processing gas supply openings (10; Figure 6, 8) in the upper wall (8; Figure 6), wherein a processing gas from the manifold cavity (9; Figure 6) passes into the processing chamber (1; Figure 6; abstract), wherein the processing gas comprises reactive gases used for processing the wafer (2; Figure 6), wherein the processing gas supply openings (10; Figure 6, 8) are non-uniformly distributed over the upper wall (8; Figure 6), and an exhaust system comprising an exhaust line (4; Figure 6) connected to the processing chamber (1; Figure 6; abstract), for flowing an exhaust gas from the processing chamber (1; Figure 6; abstract), wherein the exhaust gas comprises reacted gases and depleted processing gas, as claimed by claim 47

xiii. The apparatus of claim 47, wherein the processing gas provided into the processing chamber (1; Figure 6; abstract) enters predominantly through the processing gas supply openings (10; Figure 6, 8) , as claimed by claim 48

xiv. The apparatus of claim 47, further comprising a chamber within the processing chamber (1; Figure 6; abstract), wherein the channel is concentric and below the wafer (2; Figure 6), wherein the processing gas flows radially outwardly over the wafer (2; Figure 6) and into the channel, and then from the chamber to the exhaust location and into the exhaust line (4; Figure 6) , as claimed by claim 49

xv. The apparatus of claim 49, wherein the inner diameter of the channel is comparable to or slightly less than the outer diameter of the wafer (2; Figure 6) , as claimed by claim 50

xvi. The apparatus of claim 29, wherein all the processing gases used for processing the wafer (2; Figure 6) enter the processing chamber (1; Figure 6; abstract) only from the plurality of processing gas supply line openings (10; Figure 6, 8) between the manifold cavity (9; Figure 6) and the processing chamber (1; Figure 6; abstract), as claimed by claim 51

xvii. The apparatus of claim 29, wherein the side walls (vertical walls containing 1; Figure 6) of the processing chamber (1; Figure 6; abstract) prevent processing gases used for processing the wafer (2; Figure 6) from entering the processing chamber (1; Figure 6; abstract) through the side walls (vertical walls containing 1; Figure 6) while the wafer (2; Figure 6) is being processed, as claimed by claim 52

xviii. The apparatus of claim 42, wherein the side walls (vertical walls containing 1; Figure 6) of the processing chamber (1; Figure 6; abstract) prevent processing gases used for processing the wafer (2; Figure 6) from entering the processing chamber (1; Figure 6; abstract) through the side walls (vertical walls containing 1; Figure 6) while the wafer (2; Figure 6) is being processed, as claimed by claim 54

xix. The apparatus of claim 42, wherein the processing chamber (1; Figure 6; abstract) receives processing gases used for processing the wafer (2; Figure 6) only from the manifold cavity (9; Figure 6), as claimed by claim 55

xx. The apparatus of claim 47, wherein the reactive gases used for processing the wafer (2; Figure 6) enter the processing chamber (1; Figure 6; abstract) only from the plurality of

processing gas supply line openings (10; Figure 6, 8) between the manifold cavity (9; Figure 6) and the processing chamber (1; Figure 6; abstract), as claimed by claim 56

xxi. The apparatus of claim 47, wherein the side walls (vertical walls containing 1; Figure 6) of the processing chamber (1; Figure 6; abstract) prevent reactive gases used for processing the wafer (2; Figure 6) from entering the processing chamber (1; Figure 6; abstract) through the side walls (vertical walls containing 1; Figure 6) while the wafer (2; Figure 6) is being processed, as claimed by claim 57

Itsudo does not teach a gas supply line connected via a processing gas supply line opening formed through an upper surface of the manifold cavity.

Sivaramakrishnam teaches a gas supply (40,60,80; Figure 2) connected via a processing gas supply line opening formed through an upper surface (top of 10) of a manifold cavity (38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening.

Motivation to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening is to use process gas sources as precursors for operations and to optimize desired process gas flows as taught by Itsudo (abstract). It is well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).; MPEP 2144.04)

3. Claims 32, 35, 38, 39, 40, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itsudo et al (JP05-198512) and Sivaramakrishnam; Visweswaren et al. (US 5,531,183 A) in view of Nguyen, Tue (US 6,444,039 B1). Itsudo and Sivaramakrishnam are discussed above. Itsudo further teaches Itsudo's apparatus (Figure 6, 8; abstract) of claim 40 wherein Itsudo's openings (10; Figure 6, 8) are formed to increase a flow rate of Itsudo's gas over Itsudo's wafer (2; Figure 6) farther from Itsudo's exhaust location, as claimed by claim 41 – When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Itsudo further teaches the apparatus of claim 32, wherein the processing chamber (1; Figure 6; abstract) receives processing gases used for processing the wafer (2; Figure 6) only from the manifold cavity (9; Figure 6), as claimed by claim 53.

Itsudo and Sivaramakrishnam do not teach:

i. Itsudo's apparatus (Figure 6, 8; abstract) of claim 29 wherein flow of gas in Itsudo's processing chamber (1; Figure 6; abstract) is laminar, as claimed by claim 32

ii. Itsudo's apparatus (Figure 6, 8; abstract) of claim 34 wherein Itsudo's openings (10; Figure 6, 8) are more densely located farther from Itsudo's exhaust location, as claimed by claim 35

iii. Itsudo's apparatus (Figure 6, 8; abstract) of claim 29 wherein the intake openings (top surface of 8 at entrance of 10; Figure 6; abstract) and the exhaust openings (bottom surface of 8 at exit of 10; Figure 6; abstract) of Itsudo's processing gas openings (10; Figure 6, 8) on opposing sides of a point (geometric center of 8; Figure 8) on Itsudo's

upper wall (8; Figure 6), have the exhaust opening (bottom surface of 8 at exit of 10; Figure 6; abstract) of one opening which is angularly displaced relative to the intake opening (top surface of 8 at entrance of 10; Figure 6; abstract) of the one opening thereof in a selected direction about Itsudo's point (geometric center of 8; Figure 8), and Itsudo's second opening having the exhaust opening (bottom surface of 8 at exit of 10; Figure 6; abstract) which is angularly displaced relative to the intake opening (top surface of 8 at entrance of 10; Figure 6; abstract) thereof in Itsudo's selected direction, so that Itsudo's openings (10; Figure 6, 8) jointly create a circular gas flow pattern in Itsudo's processing chamber (1; Figure 6; abstract), as claimed by claim 38 – Applicant's Figure 4, 5 embodiment

iv. Itsudo's apparatus (Figure 6, 8; abstract) of claim 38 wherein a third of Itsudo's openings (10; Figure 6, 8), on a side of Itsudo's second opening opposing Itsudo's first opening, has an exhaust opening (bottom surface of 8 at exit of 10; Figure 6; abstract) which is displaced in Itsudo's first direction relative to an intake opening (top surface of 8 at entrance of 10; Figure 6; abstract) thereof, as claimed by claim 39

v. Itsudo's apparatus (Figure 6, 8; abstract) of claim 29 wherein Itsudo's processing gas in the manifold cavity (9; Figure 6) comprises non-depleted reactive gases used for processing the wafer, as claimed by claim 40 – However, gas identity is not considered a structural limitation in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural

difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Nguyen teaches a portion (vertical part) of a gas distribution plate (111; Figure 10) including injection holes (117, Figure 10) with Applicant's claimed angular displacement as per Applicant's Figures 4, 5.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to angle Itsudo's processing gas supply openings (10; Figure 6, 8) as taught by Nguyen, further to process the wafer under laminar flow including optimized hole distrubutions as taught by Itsudo.

Motivation to angle Itsudo's processing gas supply openings (10; Figure 6, 8) as taught by Nguyen, further to process the wafer under laminar flow including optimized hole distrubutions as taught by Itsudo is for influencing flow patterns of Itsudo's process gases to achieve controlled CVD film thickness distributions as taught by Itsudo (abstract).

Response to Arguments

4. Applicant's arguments filed February 16, 2007 have been fully considered but they are not persuasive.

5. Applicant states:

"

Applicant asserts that a reactive gas inlet and gas source are structural elements of a reaction chamber.

“

In response, the Examiner agrees. And for this reason, the Examiner applies the teaching of Sivaramakrishnam who was cited as teaching gas supply sources (40,60,80; Figure 2) connected via a processing gas supply line opening formed through an upper surface (top of 10) of a manifold cavity (38). These features are indeed absent in Itsudo. However, in resolving the level of ordinary skill in the art, the Examiner believes it would … to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening.

6. Applicant further states:

“

Further, the location of the reactive gas inlet is a critical feature of a reaction chamber, which can have a profound effect on the thnetionality of the apparatus. Similarly, the Applicant also assert that an inert gas inlet is also a structural element of a reaction chamber. Applicant asserts that it is improper to merely switch structural elements, which are very different in function, and represent them as being equivalent, without a rationale or motivation to do so.

“

7. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the Examiner has demonstrated that the prior art demonstrates teaching, suggestion, and motivation, found either in the references themselves, and in the knowledge generally available to one of ordinary skill in the art. In particular, motivation to add Sivaramakrishnam's gas supplies and for Itsudo to optimize the relative location of his processing gas supply line opening is to use process gas sources as precursors for operations and to optimize desired process gas flows as taught by Itsudo (abstract). Further, it is well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).; MPEP 2144.04). Further, as implied in the Examiner's citation of Sivaramakrishnam, Sivaramakrishnam teaches an inert gas inlet (40, 42, 46; Figure 2).

8. Applicant states[1]:

"

The issue is if it is obvious to modify Itsudo by changing the inert gas in Itsudo with the *reactive* processing gases of Itsudo that feed into the processing chamber. Therefore, the criteria for obviousness is measured by the intended use of the inert gas being injected into the light source chamber of Itsudo. Itsudo uses *inert* gas to specifically keep out and exclude processing *reactants*, which is the intended use that the substitution material must satisfy to establish obviousness. Therefore, substituting *reactive* processing gases for *inert* gases is unsuitable for the intended use of excluding processing gases from the light source chamber. The rejection is improper and fails to clearly define the intended use of the material to be replaced.

[1] This line of argument is also repeated again at mid page 13 through page 15.

"

In response, Applicant's arguments hinge on what process chemicals/materials are considered *reactive* and what process chemicals/materials are considered *inert.* See applicant's repeated consideration of reactivity and inertness above. Along the very lines of argument Applicant proposes, the criteria for obviousness is measured by the intended use of the inert gas being injected into the light source chamber of Itsudo which is specific to the *intended use* or application (process) of which Itsudo desires to carry out with his apparatus. Specifically, Itsudo's apparatus *is not limited* to the disclosed processes which fix what materials *react* and what materials are *inert.* Specifically, Itsudo is not limited to *using* his apparatus in processes which employ "inert" gas injection into Itsudo's manifold (9; Figure 6). The Examiner believes that in the very large collection of physical (spectral and thermal absorption) and chemical properties (the gases functional groups and chemical signature) of the very large number of gasses, only one gas need be *inert* in Itsudo's manifold (9; Figure 6) *and reactive* in Itsudo's processing chamber (1; Figure 6) to meet the intended use. As yet another degree of freedom, Itsudo illustrates independent spectral and thermal control in both volumes – 11 in volume 9 and 7 in volume 1 further allowing a gas to enter in an *inert state* in chamber 9 and enter a *reactive state* in chamber 1. Based on the Examiner's illustration of the large collection of physical (spectral and thermal absorption) and chemical properties (the gases functional groups and chemical signature) of the very large number of gasses, the Examiner has demonstrated operability of Itsudo's apparatus and therby debunks Applicant's contention that the Examiner's proposed combination would render the Itsudo apparatus inoperable.

9. Applicant states:

"

Itsudo disclosure advocates optimizing by injecting reaotivo gases in the processing chamber and not in the light source chamber. In fact, the motivation provided by Itsudo teaches away from the claimed invention and the proposed modification.

"

10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

11. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.